AIR QUALITY PERMITTING
STATEMENT OF BAISIS

March 1, 2005

Tier II Operating Permit/Permit to Construct
No. P-040524

Blaine Larsen Farms, Dehydration Division, Dubois

Facility ID No. 033-00002

Prepared by:

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AIR QUALITY DIVISION

FINAL PERMIT

Table of Contents

Acronyms, Units, and Chemical Nomenclatures

AACC	acceptable ambient concentration for carcinogen
acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
Btu	British thermal unit
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
gpm	gallons per minute
gr	grain (1 lb = 7,000 grains)
HAPs	Hazardous Air Pollutants
hp	horsepower
hr	hour
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
m	meter(s)
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
O_3	ozone
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SOB	Statement of Basis
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

The Blaine Larsen Farms, Inc. Dehydration Division (Larsen Farms) processes dehydrated potato products at the facility located near Dubois, Idaho. The process primarily involves potato dehydration to make potato flakes. Potatoes are cleaned, peeled, cooked and sized prior to being transferred into a drying unit. The main sources of emissions include a boiler, dryers, dehydration lines, pneumatic material transfer equipment and packaging lines. Some dryers are of the direct-fired type and some use steam from Boiler #1.

3. FACILITY / AREA CLASSIFICATION

Larsen Farms is a major facility for purposes of the Title V program as defined under IDAPA 58.01.01.008.10 because the actual or potential emissions of SO_2 and NO_x exceed 100 tons per year. Larsen Farms is not a major facility for purposes of the PSD/NSR program as defined under IDAPA 58.01.01.205.01 (40 CFR 52.21(b)(1)). The AIRS classification is "A."

The Larsen Farms facility is located within AQCR 61, UTM zone 12 and Clark County. The area is classified as attainment or unclassifiable for all federal and state criteria air pollutants. The SIC is 2034 which represents establishments primarily engaged in artificially dehydrating fruits and vegetables, including "potato flakes, granules, and other dehydrated potato products."

The AIRS information provided in Appendix C provides the classification information for each regulated air pollutant at Larsen Farms. This required information is entered into the EPA AIRs database.

4. APPLICATION SCOPE

On November 2, 2004, Larsen Farms submitted a PTC application for the installation of a custom made process cyclone that recovers pneumatically conveyed agglomerated product which is fed to the cyclone by the tote dump station. Agglomerated product is created by adding hot water and flavorings to dried potato flake products and then processing this in a fluidized bed dryer before entering the retail product line. The cyclone collects product from the tote dump station. The material throughput rate of the cyclone is 1,750 lb/hr.

Larsen Farms requests that a small natural gas-fired boiler rated at 6.7 MMBtu/hr heat input capacity be included in this PTC action even though the boiler qualifies for an exemption under IDAPA 58.01.01.222.02.c. The boiler will provide hot water for the agglomerated line and steam to the Ryan's line, and will provide steam or hot water to various small product lines during plant downtime.

The combined emissions of these sources will not affect the facility's Title V and PSD applicability.

4.1 Application Chronology

November 2, 2004	DEQ received a PTC application for a boiler and a process cyclone at Larsen Farms facility.
December 2, 2004	The PTC was declared complete.

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

Boiler #2
Manufacturer: Superior Boiler Works, Inc., Hutchinson, Kansas
Model: 6-5-1000-S150-GP
Fuel: Natural Gas only
Rated Heat Input Capacity: 6.695 MMBtu/hr
Air Pollution Control Equipment: None documented in the application

Cyclone
Manufacturer: Custom-made
Process Throughput: 1,750 lb/hr
Material Handled: Agglomerated potato flake
Process Equipment or Air Pollution Control Equipment: Process equipment application

5.2 Emissions Inventory

Installation of the cyclone does not increase the production capacity of any of the production lines already permitted in the facility-wide PTC/Tier II permit No. T2-030514. The small natural gas-fired boiler will provide hot water for the agglomeration process which is intended to enhance the properties of the dried potato when used by the consumer. The boiler will also provide additional steam capacity to operate the Ryan's line and to operate several small product lines while the facility has been shut down.

According to Larsen Farm's submittal, the new boiler and cyclone do not increase the production capacity of the facility nor do they increase potential utilization of any other emissions units beyond existing permitted capacities. The emissions increase from this project was estimated by the applicant using AP-42 Section 1.4, July 1998 emissions factors for the boiler of a size category less than 100 MMBtu/hr heat input capacity. The cyclone emissions were estimated using the PM emission factor from AP-42 Table 9.9.1-2, April 2003, and PM_{10} emissions were estimated using the 50% PM_{10} fraction listed in footnote "g" of the same table. The boiler and the cyclone were assumed to operate continuously and no additional air pollution control equipment is used on either source. The project's potential emissions are listed below in Table 5.1.

Table 5.1 SUMMARY OF CRITERIA AIR POLLUTANT EMISSIONS INVENTORY

Blaine Larsen Farms, Dubois Potential Emissions – Hourly (lb/hr), and Annual (T/yr)										
Source Description	CO		NO_x		PM_{10}		SO_2		VOC	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Boiler, Superior Boiler Works, Inc.	0.55	2.41	0.66	2.87	0.05	0.22	0.00	0.02	0.04	0.16
Cyclone, Tote Dump Station	NA	NA	NA	NA	0.07	0.29	NA	NA	NA	NA
Total Emissions	**0.55**	**2.41**	**0.66**	**2.87**	**0.12**	**0.51**	**0.00**	**0.02**	**0.04**	**0.16**

TAPs are emitted by the natural gas-fired boiler. Table 5.2 below lists the potential TAPs emissions for this project. The process cyclone is not anticipated to emit any TAPs. The emissions inventory is also listed in Appendix A, including DEQ's verification calculations based upon US EPA AP-42 Section 1.4, July 1998.

Table 5.2 SUMMARY OF BOILER TAPs EMISSIONS INVENTORY

Blaine Larsen Farms, Dubois Potential Emissions – Hourly (lb/hr), and Annual (T/yr)		
Pollutant		
	lb/hr	**T/yr**
Non-carcinogens – IDAPA 58.01.01.585		
Barium	2.9E-05	1.3E-04
Chromium	9.2E-06	4.0E-05
Cobalt	5.5E-07	2.4E-06
Copper	5.6E-06	2.4E-05
Hexane	1.2E-02	5.2E-02
Manganese	2.5E-06	1.1E-05
Mercury	1.7E-06	7.5E-06
Molybdenum	7.2E-06	3.2E-05
Naphthalene	4.0E-06	1.8E-05
Pentane	1.7E-02	7.5E-02
Selenium	1.6E-07	6.9E-07
Toluene	2.2E-05	9.8E-05
Zinc	1.9E-04	8.3E-04
Carcinogens – IDAPA 58.01.01.586		
Arsenic	1.3E-06	5.8E-06
Benzene	1.4E-05	6.0E-05
Beryllium	7.9E-08	3.5E-07
Cadmium	7.2E-06	3.2E-05
Formaldehyde	4.9E-04	2.2E-03
Nickel	1.4E-05	6.0E-05
Individual PAHs		
Benzo(a)pyrene	7.9E-09	3.5E-08
Benz(a)anthracene	1.2E-08	5.2E-08
Benzo(b)fluoranthene	1.2E-08	5.2E-08
Benzo(k)fluoranthene	1.2E-08	5.2E-08
Chrysene	1.2E-08	5.2E-08
Dibenzo(a,h)anthracene	7.9E-09	3.5E-08
Indeno(1,2,3-c,d)pyrene	1.2E-08	5.2E-08
Total PAHs	7.5E-08	3.3E-07

Modeling

The complete modeling review memorandum is contained in Appendix B. Table 5.3 contains the ambient impacts of the criteria air pollutants that are predicted to occur due to this project. The ambient impacts were below the ambient standards for each pollutant and averaging period.

Table 5.3 BLAINE LARSEN FARMS CRITERIA AIR POLLUTANT AMBIENT IMPACTS

Pollutant	Averaging Period	Facility Ambient Concentration ($\mu g/m^3$)[a]	Total Ambient concentration ($\mu g/m^3$)[a]	Percent of NAAQS[b]
NO_2	24-hour	1.09[c]	18.09	18
CO	1-hour	16.91	3616.9	9
	8-hour	7.36	2307.4	23

[a] Micrograms per cubic meter.
[b] National Ambient Air Quality Standard
[c] Represents 75% NO_X to NO_2 conversion

Emissions of carcinogenic TAPs were modeled. Modeled values are below the AACC for each pollutant. The results are listed in Table 5.4.

Table 5.4 BLAINE LARSEN FARMS TOXIC AIR POLLUTANT AMBIENT IMPACTS

Pollutant	Averaging Period	Maximum Concentration (µg/m³)	Regulatory Limit (ug/m³)	Percent Of Limit
Carcinogens				
Arsenic, As	Annual	0	2.3E-04	0
Cadmium, Cd	Annual	2E-04	5.6E-04	36
Formaldehyde, HCOH	Annual	1.08E-03	7.7E-02	1.4
Nickel, Ni	Annual	3E-05	4.2E-03	0.7

Table 5.5 contains the physical parameters for the two point sources associated with the modification request.

Table 5.5 POINT SOURCE EMISSION RELEASE PARAMETERS

Source	Stack Exhaust Type	Stack Height (ft)	Temp (°F)	Exit Velocity (ft/s)	Stack Diameter (ft)
Boiler 2	Vertical	41.42	355	22.2	1.66
CYCLONE	Downward	44.08	Ambient	0.0033	0.0033

[a] As per *Air Quality Modeling Guideline (rev. 12/31/02)*, stack's with raincaps shall have exit velocities set to 0.001 m/s.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

Installation of the boiler and cyclone constitute a modification in accordance with IDAPA 58.01.01.006.56 because they increase emissions from the facility. Therefore, this project requires a PTC.

IDAPA 58.01.01.203.03.02 ..... Demonstration of Preconstruction Compliance with NAAQS

Compliance with the NAAQS has been demonstrated in the permit application. Refer to the modeling section above and Appendix B for details.

IDAPA 58.01.01.203.03 and 210 ..... Demonstration of Preconstruction Compliance with Toxic Standards

For each modification project after June 30, 1995, the TAP rules apply only to the increase in TAP emissions associated with that particular modification. Toxic air pollutant emissions from those emissions units already permitted in PTC/Tier II permit No. T2-030514 are not applicable to this project's emissions increases. Toxic air pollutants are emitted from the facility as a result of fuel combustion in the proposed boiler. No TAPs emissions are anticipated for the cyclone.

For the TAPs analysis, Larsen Farms estimated the uncontrolled emissions increase based on the boiler's maximum rated capacity and continuous operation. Based on this conservative estimate, it has been demonstrated that the proposed project will be in compliance with the requirements of IDAPA 58.01.01.203.03 and 210. Details of the emissions estimates are provided in Appendix A, details of the modeling analysis are provided in Appendix B.

IDAPA 58.01.01.204 ..... Permit Requirements for New Major Facilities or Major Modifications in Attainment or Unclassifiable Areas

Larsen Farms estimated the net emissions increase using the uncontrolled potential to emit of the cyclone and the boiler. The net emissions increases for each PSD-regulated air pollutant were below the significant emissions increase thresholds. Facility-wide potential to emit will be below PSD thresholds. Therefore, this project does not trigger any PSD requirements for this PTC action and the facility will remain a non-major PSD source.

IDAPA 58.01.01.300 ..... Procedures and Requirements for Tier I Operating Permits

This facility is a major facility subject to Tier I major source permitting requirements. This permit modification contains permit conditions and new emissions units which must be included in the facility's Tier I operating permit. The facility has a complete Tier I operating permit application, and the Tier I operating permit is currently a draft permit. The additional emissions units and permit conditions which are applicable requirements should be addressed in a Tier I permit application update, in accordance with IDAPA 58.01.01.315.

IDAPA 58.01.01.701 ..... Particulate Matter—New Equipment Process Weight Limitations

The process weight rate PM limitation applies the agglomerated product cyclone. At a material throughput of 1,750 lb/hr, the allowable PM emission rate is 3.97 lb/hr. The applicant has estimated that PM emissions will be approximately 0.13 lb/hr. The predicted PM emission rate complies with the process weight PM limitation.

40 CFR 60—Subpart Dc..... New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units

The Superior boiler is not an affected facility for this or any other NSPS standard because the rated heat input capacity of the unit is below the heat input capacity threshold. 40 CFR 60-Subpart Dc applies to boilers with rated heat input capacities between 10 and 100 MMBtu/hr.

Regional Office Permit Review Coordination

A copy of the draft permit and technical memorandum was made available to the Idaho Falls Regional Office on January 18, 2005.

Comments from the Idaho Falls Regional Office will be incorporated accordingly.

5.5 Fee Review

Larsen Farms submitted payment of the $1000.00 permit application fee with the PTC application. The payment was received on November 2, 2004. The processing fee required by IDAPA 58.01.01.225 is $2,500.00 because the project's aggregated emissions of 6.28 T/yr falls within the category of "new source or modification to existing source with increase of emissions of one to less than 10 tons per year. Payment of the $2,500.00 processing fee was received by DEQ Fiscal on February 18, 2005. Larsen Farms is a major facility and is subject to Title V fees in accordance with IDAPA 58.01.01.389 and 391.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	2.87	0	2.87
SO_2	0.02	0	0.02
CO	2.41	0	2.41
PM_{10}	0.79	0	0.79
VOC	0.16	0	0.16
TAPS/HAPS	0.13	0	0.13
Total:	**6.38**	**0**	**6.38**
Fee Due	**$ 2500.00**		

5.6 *Facility Draft Review and Comment*

January 31, 2005	The facility draft permit package was issued to Blaine Larsen Farms.
February 2, 3005	The permittee submitted comments on the draft permit. The comments were incorporated into the final Tier II/PTC.

5.7 *Regional Office Draft Review and Comment*

January 20, 2005	A copy of the draft permit and statement of basis was provided to the Idaho Falls Regional Office.
January 24, 2005	The Idaho Falls Regional Office responded that they had no comments on the draft permit and SOB.

6. PERMIT CONDITIONS

New permit conditions and changes to the original permit associated with this project are discussed below.

Table 1.1—Summary of Regulated Sources—was altered to reflect the new equipment. Boiler #1 is the existing Wabash boiler and is listed in Section 3 of the permit. Boiler #2 is the new Superior boiler which is listed in Section 4 of the permit. The new agglomerated product cyclone is identified as the "cyclone" and is also listed in Section 5 of the permit. The numbering of permit sections was altered to include the #2 Superior boiler in Section 4, and the dehydration processes and material handling equipment are now included under Section 5. References to "the boiler" in Section 2 and of the permit and Permit Condition 5.3 were changed to "Boiler #1" to differentiate between the Boiler #1 and Boiler #2.

Superior Boiler

Permit Condition 4.2 contains the 20% visible emissions standard per IDAPA 58.01.01.625. A compliance demonstration requirement was not included in the Superior boiler permit section. Compliance with the visible emissions standard can be demonstrated using facility-wide Permit Condition 2.8.

No emission limits or operating requirements are necessary for this boiler to comply with the natural gas grain loading standard and TAPs increments. The natural gas-fired boiler has a rated heat input capacity of 6.7 MMBtu/hr and will be in compliance with all applicable rules without restrictions on operation.

Agglomerated Product Cyclone

A new permit condition was placed in Permit Condition 5.4.2 establishing a limitation on the amount of product that the proposed cyclone can process based on the hourly throughput and 24 hours per day operation. Permit Condition 5.4.2 reads:

> "The total throughput of the agglomerated product cyclone shall be limited to 42,000 pounds per day."

New Permit Condition 5.8.2 establishes the monitoring and recordkeeping requirements for the agglomerated product cyclone. Permit Condition 5.8.2 will be used to demonstrate compliance with Permit Condition 5.4.2 states:

> "When in operation, the permittee shall monitor and record, on a daily basis, the calendar date and the total daily cyclone material throughput, in pounds per day."

No other permit conditions were changed.

7. PUBLIC COMMENT

An opportunity for public comment period on the PTC application was provided in accordance with IDAPA 58.01.01.209.01.c. The opportunity for a public comment period was provided on December 15, 2004. To date there were not comments on the application and no requests for a public comment period on DEQ's proposed action.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that Larsen Farms be issued a final Tier II/PTC permit No. P-040524 for the installation of a small natural gas-fired boiler and a process cyclone. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

DAM/sd Permit No. P-040524

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APPENDIX A

DEQ EMISSION INVENTORY SPREADSHEET

Blaine Larsen Farms, Inc. - Dehydration Division **Location - Hamer (7 miles south of Dubois, Idaho)**
Project Identification Number: P-040524
Process Cyclone Emissions **Source: Agglomerated Product Cyclone**

Source Operating Schedule (worst-case)	
Hours per day	24
Days per year	365

Source	Particulate Matter Emission Factor (lb PM/ton product)	PM_{10} Emission Factor (lb PM_{10}/ton) of product)	Process Throughput (lb/hr)	Hourly PM Emissions (lb/hr)	Hourly PM_{10} Emissions (lb/hr)	Daily PM Emissions (lb/day)	Daily PM_{10} Emissions (lb/day)	Annual PM Emissions (Tons/yr)	Annual PM_{10} Emissions (Tons/yr)
Cyclone	0.15	0.075	1750	0.13	0.07	3.15	1.58	0.57	0.29

PM_{10} emissions assumed to be 50% of the PM emission factor.

Process Weight Rate Limitation per IDAPA 58.01.01.701

Governing process weight rate equation

PM Emission Limit (lb/hr) = 0.045 * (Process weight [lb/hr])^0.60

PM Emission Limit =	**3.97 lb PM/hr**

Calculated PM Emissions = 0.15 lb/hr

Compliance with the process weight PM emission limit has been demonstrated.

Blaine Larsen Farms, Inc. - Dehydration Division		
Location - Hamer (7 miles south of Dubois, Idaho)		
Project Identification Number: P-040524		
Rated Heat Input Capacity of Boiler	6.70 MMBtu/hr	
Daily Hours of Operation	24 hr/day	
Annual Hours of Operation	8760 hr/yr	
Btu Content of Natural Gas	1020 Btu/scf	
Hourly Emission Rate (lb/hr) = (Heat Input (10^6 Btu/hr)) * (1 scf / 1020 Btu) * (lb pollutant / 10^6 scf)		
Daily Emissions Rate (lb/day) = (Hourly Emissions Rate (lb/hr) * Number of hr/day)		
Annual Emission Rate (Tons/yr) = (Hourly Emissions Rate (lb/hr) * (Number of hr/yr) * (1 ton / 2000 lb)		

Natural Gas Combustion PTE - Space Heaters (Aggregated)

Pollutants	Emission Factors (lb/E^6 scf)	Hourly Emissions (lb/hr)	Daily Emissions (lb/day)	Annual Emissions (T/yr)
Criteria Pollutants				
Lead (Pb)	0.0005	3.28E-06	7.88E-05	1.44E-05
CO	84	5.52E-01	1.32E+01	2.42E+00
NO_x (as NO_2)	100	6.57E-01	1.58E+01	2.88E+00
PM (Total)	7.6	4.99E-02	1.20E+00	2.19E-01
PM10 (condensible + filterable)	7.6	4.99E-02	1.20E+00	2.19E-01
SO_2	0.6	3.94E-03	9.46E-02	1.73E-02
VOCs	5.5	3.61E-02	8.67E-01	1.58E-01
HAPs (TAPs where indicated)				
2-Methylnaphthalene	2.40E-05	1.58E-07	3.78E-06	6.90E-07
3-Methylchloranthrene	1.80E-06	1.18E-08	2.84E-07	5.18E-08
7, 12 Dimethylbenz(a)anthracene	1.60E-05	1.05E-07	2.52E-06	4.60E-07
Acenaphthene	1.80E-06	1.18E-08	2.84E-07	5.18E-08
Acenaphthylene	1.80E-06	1.18E-08	2.84E-07	5.18E-08
Anthracene	2.40E-06	1.58E-08	3.78E-07	6.90E-08
Benz(a)anthracene	1.80E-06	1.18E-08	2.84E-07	5.18E-08
Benzene	2.10E-03	1.38E-05	3.31E-04	6.04E-05
Benzo(a)pyrene	1.20E-06	7.88E-09	1.89E-07	3.45E-08
Benzo(b)fluoranthene	1.80E-06	1.18E-08	2.84E-07	5.18E-08
Benzo(g,h,i)perylene	1.20E-06	7.88E-09	1.89E-07	3.45E-08
Benzo(k)fluoranthene	1.80E-06	1.18E-08	2.84E-07	5.18E-08
Chrysene	1.80E-06	1.18E-08	2.84E-07	5.18E-08
Dibenzo(a,h)anthracene	1.20E-06	7.88E-09	1.89E-07	3.45E-08
Dichlorobenzene	1.20E-03	7.88E-06	1.89E-04	3.45E-05
Fluoroanthene	3.00E-06	1.97E-08	4.73E-07	8.63E-08
Fluorene	2.80E-06	1.84E-08	4.41E-07	8.06E-08
Formaldehyde	7.50E-02	4.93E-04	1.18E-02	2.16E-03
Hexane	1.80E+00	1.18E-02	2.84E-01	5.18E-02

Indeno(1,2,3-cd)pyrene	1.80E-06	1.18E-08	2.84E-07	5.18E-08
Naphthalene	6.10E-04	4.01E-06	9.62E-05	1.76E-05
Pentane - TAP, not a HAP	2.60E+00	1.71E-02	4.10E-01	7.48E-02
Phenanthrene	1.70E-05	1.12E-07	2.68E-06	4.89E-07
Pyrene	5.00E-06	3.28E-08	7.88E-07	1.44E-07
Toluene	3.40E-03	2.23E-05	5.36E-04	9.78E-05
METALS				
Arsenic	2.00E-04	1.31E-06	3.15E-05	5.75E-06
Barium - TAP, not a HAP	4.40E-03	2.89E-05	6.94E-04	1.27E-04
Beryllium	1.20E-05	7.88E-08	1.89E-06	3.45E-07
Cadmium	1.10E-03	7.23E-06	1.73E-04	3.16E-05
Chromium	1.40E-03	9.20E-06	2.21E-04	4.03E-05
Cobalt	8.40E-05	5.52E-07	1.32E-05	2.42E-06
Copper - TAP, not a HAP	8.50E-04	5.58E-06	1.34E-04	2.45E-05
Manganese	3.80E-04	2.50E-06	5.99E-05	1.09E-05
Mercury	2.60E-04	1.71E-06	4.10E-05	7.48E-06
Molybdenum - TAP, not a HAP	1.10E-03	7.23E-06	1.73E-04	3.16E-05
Nickel	2.10E-03	1.38E-05	3.31E-04	6.04E-05
Selenium	2.40E-05	1.58E-07	3.78E-06	6.90E-07
Vanadium - TAP, not a HAP	2.30E-03	1.51E-05	3.63E-04	6.62E-05
Zinc - TAP, not a HAP	2.90E-02	1.90E-04	4.57E-03	8.34E-04
	Annual Aggregated HAPs:			**1.28E-01 T/yr**

Natural Gas Combustion HAPs	
Aggregated HAPs Subtotal =	**0.128 tons/year**
Aggregated TAPs and HAPs Subtotal =	**0.130 tons/year**

Section 586 TAPs review — Polycyclic Organic Matter (total) compared to benzo(a)pyrene

TAP	Hourly Emissions (lb/hr)	Daily Emissions (lb/day)	Annual Emissions (T/yr)
Polycyclic Organic Matter (as benzo(a)pyrene)	7.49E-08	1.80E-06	3.28E-07

APPENDIX B

DEQ MODELING MEMORANDUM

MODELING MEMORANDUM

DATE: January 19, 2005

TO: Darrin Mehr, Permit Writer

THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator

FROM: Almer Casile, Permitting Analyst

PROJECT NUMBER: P-040524

SUBJECT: Modeling Review for the Blaine Larsen Farms, Dehydration Plant, Dubois
Facility ID No. 033-00002

1.0 Summary

Atmospheric dispersion modeling of emissions was submitted in a Tier II/permit to construct application to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02). This modeling analysis included one source, and addressed the criteria pollutants CO and NO_2 and TAPs arsenic, cadmium, formaldehyde and nickel.

Based on the results of the analysis, DEQ has determined that the submitted modeling analysis demonstrates, to DEQ's satisfaction, that the facility will not cause or contribute to a violation of any ambient air quality standards of CO, NO_2, arsenic, cadmium, formaldehyde, or nickel.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits

This facility is located in Clark County which is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}). The application proposes changes in emissions that exceed modeling thresholds for CO, NO_2 and the screening levels for arsenic, cadmium, formaldehyde, and nickel. The applicable regulatory limits for the application are presented in Table 1.

Table 1. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels (μg/m³)[a,b]	Regulatory Limit (μg/m³)[c]	Modeled Value Used[d]
CO	1-hour	2000	40,000[e]	Highest 2[nd] highest
	8-hour	500	10,000[e]	Highest 2[nd] highest
NO_2	Annual	1	100[f]	Maximum 1[st] highest
Arsenic, As	Annual	N/A	2.3E-04[f]	Maximum 1[st] highest
Cadmium, Cd	Annual	N/A	5.6E-04[f]	Maximum 1[st] highest
Formaldehyde, HCOH	Annual	N/A	7.7E-02[f]	Maximum 1[st] highest
Nickel, Ni	Annual	N/A	4.2E-03[f]	Maximum 1[st] highest

a. IDAPA 58.01.01.006.93

b. Micrograms per cubic meter

c. IDAPA 58.01.01.577 for criteria pollutants, IDAPA 58.01.01.585 for non-carcinogenic toxic air pollutants IDAPA 58.01.01.586 for carcinogenic toxic air pollutants.

d. The maximum 1[st] highest modeled value is always used for significant impact analysis and for all toxic air pollutants. Concentration at any modeled receptor.

e. Never expected to be exceeded more than once in any calendar year.

f. Never expected to be exceeded in any calendar year.

2.2 Background Concentrations

The appropriate background concentrations for this modeling analysis were provided by DEQ in its October 2004 review of the modeling protocol. The concentrations are presented in Table 2.

Table 2. BACKGROUND CONCENTRATIONS.

Pollutant	Averaging Period	Background concentrations (μg/m³)[a,b]
CO	1-hour	3600
	8-hour	2300
NO_X	Annual	17

a. Micrograms per cubic meter.

b. Based on statewide default background concentrations for rural/agricultural areas

3.0 Assessment of Submitted, Certified Modeling Analysis

This section documents the assessment of the application materials as submitted and certified by the applicant.

3.1 Modeling Methodology

JBR Environmental Consultants, Inc. conducted the modeling analysis. Table 3 presents the modeling assumptions and parameters used by the applicant. Table 3 also includes DEQ's review and determination of those assumptions and parameters.

Table 3. MODELING PARAMETERS.		
Parameter	What Facility Submitted	DEQ's Review/Determination
Modeling protocol	A modeling protocol was submitted for prior approval	The original protocol was followed.
Model Selection	ISC-Prime version 04269	This version was used to review the submitted files.
Meteorological Data	DEQ 1987 through 1991 surface data for Pocatello, 1987 through 1991 upper air data for Boise	Appropriate
Model Options	Regulatory defaults used	Appropriate
Land Use	Rural land use	Appropriate
Complex Terrain	Simple and complex terrain is included in the model	Appropriate
Building Downwash	Downwash was included	Appropriate
Receptor Network	25 meters along ambient air boundary 100 meters out to 1000 meters 25 meters along predicted hot spots	This is sufficient to adequately address the maximum design concentration
Facility Layout	Plot Plan	The facility building layout used in the model was verified by using the scaled plot plan submitted by the applicant. Stack and the kiln exhausts locations were verified against updated information submitted by the facility.

3.2 Emission Rates

Table 4 provides the criteria pollutant and TAPs emission rates used in the submitted modeling files, respectively.

Table 4. EMISSION RATES FOR CRITERIA AND TOXIC POLLUTANTS						
Source	Emission Rate (lb/hr)[a]					
	CO[b]	NO_x[c]	As[d]	Cd[e]	HCOH[f]	Ni[g]
Boiler 2	0.55	0.66	1.36E-04	7.2E-06	4.9E-04	1.4E-05

[a] Pounds per hour.
[b] Carbon monoxide
[c] Nitrogen oxides
[d] Arsenic
[e] Cadmium
[f] Formaldehyde
[g] Nickel

3.3 Emission Release Parameters

The emission release parameters used in the modeling analysis submitted by the applicant are presented in Table 5.

Table 5. POINT SOURCE EMISSION RELEASE PARAMETERS					
Source	Stack Exhaust Type	Stack Height (ft)	Temp (°F)	Exit Velocity (ft/s)	Stack Diameter (ft)
Boiler 2	Vertical	41.42	355	22.3	1.66

[a] *As per Air Quality Modeling Guideline (rev. 12/31/02), stack's with raincaps shall have exit velocities set to 0.001 m/s.*

3.4 Results

This section present the results based on the information submitted as certified by the applicant.

3.4.1 *Full Impact Analysis Results*

As provided in the application, CO and NO_2 from the boiler exceeded threshold modeling values given in *Air Quality Modeling Guideline (rev. 12/31/02).* These pollutants were modeled and the results are included in the following table.

Table 6. FACILITY CONCENTRATIONS FOR CRITERIA POLLUTANTS FOR FULL IMPACT ANALYSIS

Pollutant	Averaging Period	Facility Ambient Concentration ($\mu g/m^3$)[a]	Total Ambient concentration ($\mu g/m^3$)[a]	Percent of NAAQS[b]	Receptor Location	
					East (m)	North (m)
NO_2	24-hour	1.09[c]	18.09	18	402475	4881825
CO	1-hour	16.91	3616.9	9	402475	4881775
	8-hour	7.36	2307.4	23	402475	4881750

[a] Micrograms per cubic meter.
[b] National Ambient Air Quality Standard
[c] Represents 75% NO_x to NO_2 conversion

3.4.2 *Toxic Air Pollutants Results*

Emissions of carcinogenic TAPs were modeled. Modeled values are below AACC for each pollutant. The detailed results are in the following table.

Table 7. TOXIC AIR POLLUTANTS ANALYSIS RESULTS

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	Regulatory Limit ($\mu g/m^3$)	Percent Of Limit
Carcinogens				
Arsenic, As	Annual	Less than 0.0E-04	2.3E-04	Less than 0.0E-04
Cadmium, Cd	Annual	2E-04	5.6E-04	36
Formaldehyde, HCOH	Annual	1.04E-03	7.7E-02	1.4
Nickel, Ni	Annual	3E-05	4.2E-03	0.7

APPENDIX C

AIRS INFORMATION

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Blaine Larsen Farms, Inc.
Facility Location: Dubois
AIRS Number: 033-00002

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	A		A					U
NO_x	A		A					U
CO								U
PM_{10}								U
PT (Particulate)								
VOC								U
THAP (Total HAPs)								
			APPLICABLE SUBPART					
			Db	NONE	NONE			

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).